AN IMPROVED INSULATED BOTTLE

TECHNICAL FIELD :

The present invention generally relates to the combination of a Bottle and an insulatory Receptacle for it , and more particularly , is concerned with a reusable Bottle closed with a circular , threaded Closure Cap and stored within a rigid , portable , non-permanently assembled Receptacle in a non-rotatable , mostly spaced apart manner and where the accessed Closure Cap of the Receptacle Body secured Bottle is operatable without stored Bottle rotation or uplift .

BACKGROUND ART :

It is convenient to keep and carry drinking water for personal use in plastic bottles . Since cold water kept in a naked , thin walled bottle will reach ambient temperature quickly , the PRIOR ART had developed various types of Bottles along with Insulative Bags and Covers made from soft , flexible sheet material or Holders made from Expanded Polystyrene or Polymer . These were based either on the 'squeeze to drink' or 'remove to drink' style , and used a soft Polymer bottle or a single trip bottle made from Glass or Polyethylene Terepthalate . However , the need for a sturdy , single hand held Insulated Bottle Device , using a shatter proof , reusable Bottle not requiring squeezing and openable conveniently without removal from its spartan but effective holding Receptacle was unmet .

My previous application 940/MUM/2002 is related to this field .

Disclosure of the Invention :

The object of the present invention is to provide a single hand held Insulated Bottle Device for repeated use , wherein a reusable , odour free , sturdy , shatter proof , clear polymer Bottle , capable of holding cold water , is securably stored in a non-rotatable , spaced apart manner within an insulatory , rigid , portable , non-permanently assembled Receptacle adapted to it and where the enclosed Bottle can be opened and closed conveniently while mostly within its holder .

It is an objective of the invention that the Bottle is seated securably within the assembled Receptacle manner yet the outer contour of the Bottle is substantially spaced apart from the inner contour of the Receptacle so as to minimize heat gain by conduction and to reduce any impact pass on to stored Bottle .

One more objective of this invention is that the Bottle's upright body shape and the Bottle body holder's upright inner shape are so made that when the Bottle is stored in its holder , it has its upright body both touching and spaced apart from its body holder's upright inner contour .

In a further objective , the Bottle becomes non-rotatable within its body holder because of the touching of its upright body with the inner of its body holder .

It is a further objective of the invention that the Bottle is of a type that has external threads on its upright neck

end , so that two useful types of circular , internally threaded Closure Caps can be used .

It is another objective of the invention that the Receptacle Body accepts the Bottle body in a manner that leaves the Bottle's upper shoulder and closure capped neck outside Body , so that the secured Bottle does not have to be removed from Body to open the circular Closure Cap .

In still another objective of the invention , a Bottle Restrainer is affixed onto the Receptacle Body without hindering access to Bottle's Closure Cap so that after said Restrainer is secured onto Body , the Body seated Bottle cannot come out of Body and therefore , when secured Bottle's Closure Cap's spout cap is opened longitudinally , the Bottle does not move .

In another objective of the invention , the single walled Receptacle Body is made fully opaque with incorporated reflectivity to minimize outdoor heat absorption or fully clear for indoor use and circular viewing .

In a further objective of the invention , the Receptacle Body has an alternative embodiment wherein the opaque Body has a fitted clear piece within its upright wall.

Briefly , the invention provides an Insulated Bottle , characterized by a closure capped Bottle stored within an insulatory , rigid , portable Receptacle . Both are adapted to each other . The Receptacle is formed from the non-permanent sequential assembly of three polymer components , a hollow Body , a Bottle Restrainer and a Top Cup , which

jointly store the reusable Bottle in a securable , mostly spaced apart , removable and refittable manner . The Bottle is made from clear polymer and uses a removable and resecurable thread type circular Closure Cap . The Bottle has within its upright body , a limited non-circular portion and a substantial circular portion . The non-circular portion touches the Body inner and makes the Body held Bottle non-rotatable . The Closure Cap affixed onto Body seated and secured Bottle is openable and closable without Bottle rotation or uplift . The Receptacle Body can be fully opaque with incorporated or applied reflectivity , or fully clear , or mostly opaque but having a fitted clear window in its upright wall .

Brief description of Drawings:

Fig 1 is a longitudinal , sectional view of the Device , showing its components .

Fig 2 is a front elevational view of the Bottle .

Fig 3 is a top view of the Receptacle Body's open end mouth with Body seated Bottle .

Fig 4 is a longitudinal , sectional view of the alternative embodiment of the Receptacle Body , showing the location and possible shapes of the fitted clear window .

Fig 5 is a blow up of the components of the disassembled Device .

Detailed description of Drawings :

Fig 1 denotes the Device by the numeral 6 , and the components of the Device , as shown in Fig 1 are :

a) The Bottle 7 .
b) The circular Closure Cap 8 .
c) The Receptacle Body 9 .
d) The Bottle Restrainer 10 .
e) The Top Cup 11 .

The upright , circular , outer threaded neck end of Bottle 7 takes circular , internally threaded Closure Cap 8 . Closure capped Bottle 7 has to be seated in Receptacle Body 9 , after which Body 9 will accept sequentially , Bottle Restrainer 10 and Top Cup 11 to form the insulatory Receptacle storing the closure capped Bottle . The Closure Cap is removable and resecurable , and the assembled Receptacle can be dis-assembled for washing or cleaning .

The second Closure Cap style is shown in Fig 2 by the numeral 23 . The alternative embodiment of the Receptacle Body is shown in Fig 4 .

The Bottle 7 is a hollow container made from Polyethylene Terepthalate [PET] . A PET bottle with a circular , externally threaded open neck end is machine blown from a smaller injection moulded preform of the same material , wherein the preform has external threads moulded on its outer upper end , such threads subsequently becoming the external threads of open neck of formed bottle . When a PET

preform is heated , stretched and blown into a bottle shape , the bottle wall thickness varies ; to avoid confusion , the drawings do not show this variance . In the drawings , the wall thickness of the Bottle is shown as uniform , even though practically , this will not be so . The Bottle is made from a much heavier perform than is normally used for a similar size PET bottle to give a sturdy , long life bottle.

The formed Bottle 7 has a base and base depending upright body part , a body top end depending inwardly tapered shoulder part and a shoulder end depending upright , circular , open neck end part 12 (Fig 1) . The upright body part comprises a longitudinally limited , non-circular , flat sided portion 13 (Fig 2) and a longitudinally substantial, circular portion 14 (Fig 2) . 13 is wider than 14 . A longitudinally nominal , inwardly tapered portion connects 13 & 14 . The neck end 12 has external threads to take a circular , internally threaded , non-permanently fixed , removable and refixable Closure Cap for secure closement of said neck end . The Bottle base is 15 . In PET bottles , because of wall thickness variance , it is advantageous to incorporate external ribs into the wall structure . Vertical Ribs in the Bottle's upright circular portion 14 are shown by the numeral 16 (Fig 2).

The Bottle 7 will contain within itself , the required cold water . The open neck end of the Bottle is to be closed with the resecurable circular Closure Cap 8 or resecurable circular Closure Cap 23 . Closure Cap 8 is a single piece that has a flat disc-like top wall portion and an annular skirt portion depending from the top wall portion . Closure

Cap 23 has a top portion , a top depending annular skirt portion , and within its top , an integrated , longitudinal spout to which is affixed a moveable cap ; this cap has to be pulled up to allow water flow through the spout and pushed down to close the spout . Both 8 & 23 have similar threads on the inner face of their similar downward depending annular skirts for securing to Bottle neck external threads . Fig 1 shows Closure Cap 8 and Fig 2 shows Closure Cap 23 . Closure Cap 8 is commonly known as a 'single piece' cap and Closure Cap 23 is commonly known as sports 'push pull cap' .

The Receptacle Body 9 will seat and hold the body of Bottle 7 . The Body 9 is a hollow , single walled , injection moulded rigid polymer shape , having a first open upper end and a longitudinally spaced apart second closed lower end . The Body 9 will accept , seat and enclose within itself , the Bottle's base 15 and body portion 14 and 13 , along with the portion connecting 14 & 13 , leaving only Bottle's shoulder and neck outside itself . The Body will prevent self-seated Bottle's rotation because Body's inner can accept but will non-rotatably restrict the similar shaped but nominally smaller , upright , non-circular portion 13 of the enclosed Bottle's body . When Bottle 7 is seated in Body 9 , with Bottle base 15 resting on Body base inner , only upright portion 13 of Bottle 7 will touch Body upright inner ; upright portion 14 of Bottle 7 will not touch Body upright inner because 13 is wider than 14 . This is shown in Fig 1 .

Fig 3 is a top view of the Receptacle Body's open end mouth with Body seated Bottle . It shows the achieved position of Bottle's non-circular , flat sided portion 13 within

Receptacle Body's inner shape 17 . The Body's non-circular inner shape 17 can accept but will non-rotatably restrict , the similar shaped but nominally smaller non-circular portion 13 of enclosed Bottle's body .

Since Body 9 is a hollow , single walled injection moulded shape , it can be made reflectively opaque or clear . The alternative embodiment of the Body is shown in Fig 4 , wherein the Body is made opaque but has a fitted clear window 18 placed into a formed integral emptiness in the central part of its upright wall . This window starts from below the outer threads on Body top outer and stops before the end of the upright wall . The window 18 can have two shapes , flat shape 18A or curved shape 18B , both shown in Fig 4 . The Body is holdable by a strap or clip attached to attachment point 19(Fig 1) or by an integrated handle 20(Fig 3) . The strap can take a nametag to show owner of Device . The Body's top outer has threads to take the Bottle Restrainer and Top Cup securely but releaseably .

The Bottle Restrainer 10 is to be affixed releaseably onto Body's open end outer to restrain the Bottle seated in the Body . The restrained Bottle's neck end will be upward and outside of enclosing Body and restraining Restrainer . The Bottle Restrainer is a saucer dome with an integral lower depending annular skirt wall , the dome having a central circular opening wider than the Bottle affixed Closure Cap . The skirt wall has an internal thread formation 21 configured for engagement with the threads on Body's open end outer . When the Restrainer is placed skirt downwards onto Body's open mouth for securement , whilst , the Body seats the Bottle , then the Restrainer's roof

opening allows through itself , upward and outward passage to the Body seated Bottle's upright circular closure capped neck and upper shoulder . When Restrainer 10 is affixed to Body 9 , then Restrainer roof opening periphery 22 will rest on Bottle's shoulder .

The Top Cup 11 is to go around Bottle Restrainer 10 and onto Body 9 top outer so as to complete the Receptacle form . The Cup has threads on its inner mouth for releasable securing to threads on Body outer . The Cup cavity can accommodate either style of Closure Cap , the shorter 8 or the longer 23.

The Body 9 can be made opaque or clear ; if opaque then reflectivity can be incorporated or applied ; this is done by adding suitable material to the production process or by the application of a reflective film , resin , metal or polymer on its surface .

The Body's alternative embodiment is made opaque with a formed integral emptiness in the central part of its upright wall . Into this emptiness , another formed clear window 18 is fitted . This window can have a flat shape , 18A or a curved shape 18B .

When the Body is clear , circular external viewing of enclosed Bottle and water is possible . The alternative embodiment of the Body allows partial external viewing of Bottle and level of Bottle held water .

For use , the Bottle 7 is filled with cold water and closed with Closure Cap 8 or 23 . Bottle 7 , filled and capped , is

then placed in Receptacle Body 9 , with Bottle base downwards until Bottle base 15 is sitting on Body's base inner . Once the Bottle is seated within Body , the threaded skirt of the Bottle Restrainer can be secured onto Receptacle Body outer ; such securement makes the Bottle Restrainer's roof opening's periphery to come and rest on Bottle shoulder . The Top Cup can now be secured onto Body outer to complete the Receptacle form .

To drink water from Receptacle stored Bottle , the Top Cup is removed from Body . This gives access to Closure Cap on Bottle neck . The Cap can be opened to drink water and then closed ; If Closure Cap 8 is used , the Bottle will not rotate when Cap 8 is rotationally opened or closed , and if Closure Cap 23 is used , lifting the spout on Cap will not make the Bottle come out of the Body .